rate in this flock was actually only 2.55%, which compares very favourably with the 25% to 50% mortality that may be expected in untreated birds.

When the original method was first used 1,150 birds, four weeks of age, were treated with sodium sulphamethazine in the ratio of 1 ounce to 3 gallons of drinking water for three days. At the commencement of treatment, there was definite evidence of blood in the pens but, despite this, not one bird died. However, five days later, coccidiosis appeared again and sodium sulphamethazine in the ratio of 1 ounce to 3 gallons of drinking water was administered for one day. There were no deaths at the time. Eight days later, coccidiosis again made its appearance and was brought under control without any deaths by two days' treatment with sodium sulphamethazine in the ratio of 1 ounce to six gallons of drinking water. Such experiences suggested the above modification.

As a result of the survey of the farms in this district, where secondary outbreaks did occur, it was suggested to me that there was either too little contamination of the litter or that the drug had been given in amounts that suppressed the parasites too strongly. Thus, in order to correct either or both of these conditions the extended or intermittent treatment was suggested and has proved very satisfactory for routine practice in the single flock farms in the Joliette districts this season.

Summary

(1) Sodium sulphamethazine, when administered in the drinking water in the ratio of 1 ounce to 3 gallons for three or four days, has proved of exceptional value for the treatment of caecal coccidiosis in large poultry plants where contamination of the litter with coccidial oocysts is heavy.

(2) When contamination of the litter with infective oocysts is not heavy, as in the average small flock in the Joliette area this season, intermittent treatment over an eleven-day period has given good results and appears to be more satisfactory for routine use than the three or four-day treatment recommended for large plants.

Reference

1. SWALES, W. E.; *New Methods of Controlling Caecal Coccidiosis in Chicks.* Can. J. Comp. Med.: 11:1, 5 (January) 1947.

Hjarre and Wramby Disease in Turkeys (Coli-Granuloma)

By FRANK W. SCHOFIELD *

UNDER the heading of Current Literature in the July number of the A.V.M.A. (A.V.M.A. Vol. CIX No. 832 p. 77) an abstract appears of a paper by Hjarre and Wramby entitled "Coligranuloma."

The disease described by these authors has been recognized in many parts of Sweden, occurring in adult birds, chickens, turkeys, and partridge.

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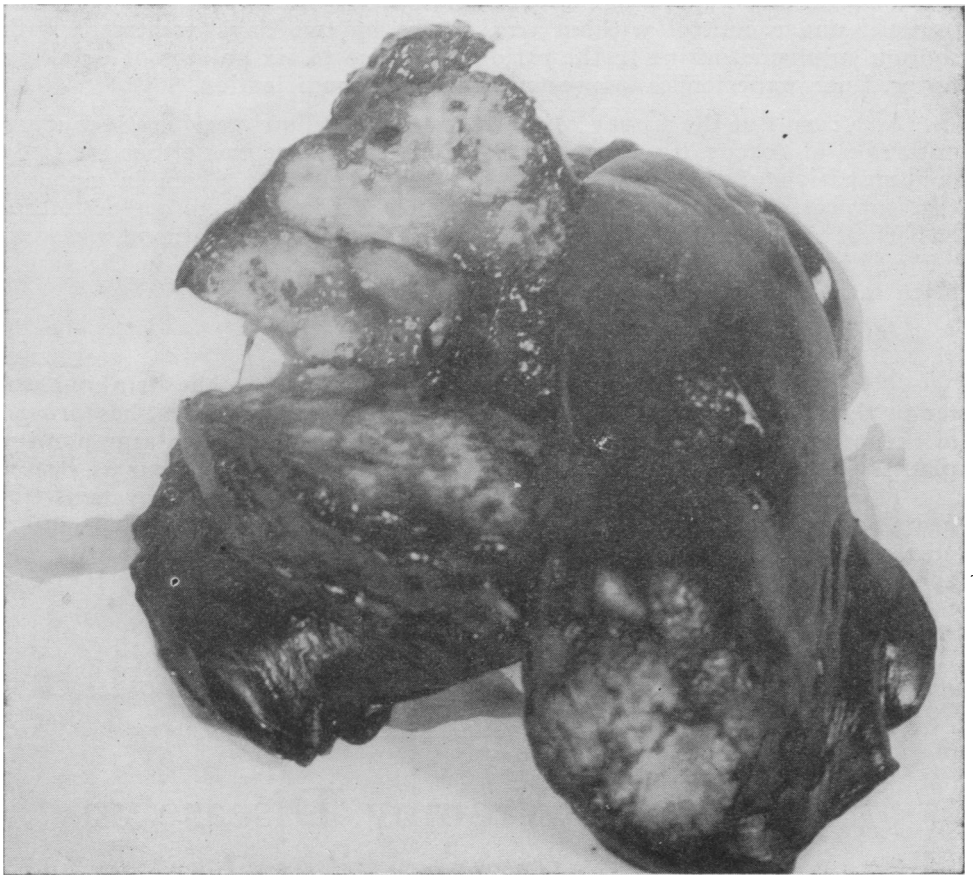
The lesions which closely resemble tuberculous tissue are found in the ceca, liver, lungs and bone marrow, but not in the spleen. Tubercule bacilli have never been isolated but a mucoid type of *Escherichia coli* has been recovered from many cases. The disease has been readily reproduced in poultry by the intramuscular inoculation of cultures or by injections of ground tissue. The disease, however, could not be reproduced by the inoculation of ordinary strains of *E. coli*. Histologically the lesions consist of necrotic tissue surrounded by epitheloid and giant cells. These are the most important facts contained in the abstract.



Liver of Turkey Showing Granulomatous Lesions.

During a visit to Manitoba in the summer of 1946, my attention was drawn by Dr. Savage, the Provincial Veterinarian and Dr. Arbuthnot of Portage la Prairie, to a serious disease of turkeys which had occurred on a particular ranch in 1943 and again in 1945. The characteristic lesions of the disease were tuberculous-like nodules and masses occurring in the liver. Neither acid-fast organisms nor histomonas could be demonstrated and no diagnosis had been made.

Shortly after this visit the abstract of Dr. Hjarre's paper was seen and the close similarity between the coligranuloma of Hjarre and the Ma-

nitoba disease was recognized. An immediate request was made for specimens, should the disease recur. Due to an unfortunate series of events we received only three specimens. First of all, only a few cases occurred on this ranch this fall and secondly, another disease Leukocytozoon infection decimated the flock and seemed to offset what might have been a very convenient outbreak of Hjarre disease.

Description of the Lesions as Seen in the Specimens Received from Manitoba. Gross Pathology.—Lesions were present in the ceca and liver and in one case in the lungs also. In the ceca the mucous membrane showed several sharply defined areas of necrotic inflammation. The exudate which is composed of fibrin, necrotic tissue and fecal matter projects well above the surface of the mucosa to which it is firmly attached. The lesions varied in diameter from approximately 5 to 18 mm. A zone of marked congestion surrounded each lesion. In the liver the lesions varied from a few tiny foci of necrosis of miliary size to extensive areas of necrosis involving the greater part of a lobe. The diseased areas project slightly above the surface of the liver. The older lesions are grayish white in colour, containing dark yellow foci of coagulative necrosis. The lesions in the lung were similar to these of the liver.

Histopathology.—The early lesion. This consists of an irregular area of sharply defined coagulative necrosis in which the outlines of the hepatic cells are easily recognized. These areas are usually surrounded by a zone of giant cells and large numbers of endothelial cells are present in the immediate vicinity. Between the necrotic and the normal liver tissue there is a wide zone of damaged liver cells heavily infiltrated by endothelial cells and a few polymorphs and lymphocytic cells.

The Mature Lesion.—The outline of the liver cells is no longer visible and the necrotic area is infiltrated by large numbers of phagocytic cells and foci of caseation are present. The surrounding liver tissue has undergone progressive degeneration and necrosis with marked cell infiltration, the chief cell being the endothelial. Giant cells are numerous and a few fibroblasts are proliferating. The lesion is well described as granulomatous.

Note on Bacteriology.—Dr. Bain, Department of Bacteriology, was unable to isolate the mucoid strain of *E. coli*. The organism may have been present but the tissues were contaminated on arrival. Cultures of coli isolated failed to reproduce the disease on inoculation. Triturated tissues, when fed, injected into the lower bowel, and inoculated intravenously into turkeys and chickens, failed to produce visible lesions.

Based upon the pathological findings.—

(1) We believe that the disease described is identical with the Coligranuloma of Hjarre and Wramby.

(2) The disease may very readily be confused with tuberculosis.